IN THE CLAIMS

1-7. (canceled)

8. (currently amended) A method for updating a forwarding database that includes a number (N) of prefixes, the method comprising:

forming a hierarchical tree structure having root, branch and leaf nodes that define (i) at least a minimum number (N/T) of sub-databases of the forwarding database and (ii) respective bit combinations associated with the sub-databases, wherein ~~of the forwarding database by splitting~~ each prefix of the N ~~number of~~ prefixes is stored within one of the ~~within the database into~~ ~~a number of~~ sub-databases having an associated bit combination that matches corresponding bits within the prefix, and~~bounded by N/T and 2N/T+1~~ ~~,~~wherein each of the sub-databases has no more than a predetermined~~T~~ number (T) of prefixes, and at least one of the sub-databases includes a plurality of the prefixes ~~with T being less than N~~;

modifying the hierarchical tree structure in accordance with one or more update operations; and

updating ~~a portion~~one or more of the sub-databases ~~of the forwarding database~~ to reflect modifications made to the hierarchical tree structure, wherein the one or more updated ~~portion~~ sub-databases correspond~~s~~ to only those ~~sub-databases~~portions of the hierarchical tree affected by the update operations.

9. (currently amended) The method of claim 8, wherein said forming comprises, beginning with ~~the~~ a most significant bit of the N number of prefixes, repeatedly splitting the N number of prefixes into a plurality of nodes extending between and including a root node and ~~a~~ the ~~plurality of~~ leaf nodes, and wherein each of the ~~plurality of~~ leaf nodes corresponds to one of the sub-databases.

10. (original) The method of claim 9, wherein said modifying comprises performing the update operations on one or more of the plurality of leaf nodes, wherein the update operations are selected from a group comprising: adding a new prefix to the forwarding database, deleting an existing prefix from the forwarding database and modifying an existing prefix in the forwarding database.

11. (currently amended) The method of claim 10, wherein said modifying further comprises performing the update operations on one or more of the branch nodes~~no further steps~~.

12. (currently amended) The method of claim 10, wherein said modifying further comprises ~~one or more of the following~~:

splitting, into at least one additional pair of leaf nodes, a leaf node~~,~~ associated with a sub-database to which a new prefix is to be added and which, upon adding the new prefix would contain more than T prefixes~~which has been modified to include more than T number of prefixes, into at least one additional pair of leaf nodes, each having less than T number of prefixes~~; and

merging, with a branch node, -a leaf node~~,~~ associated with a sub-database which, upon completion of an update operation, would be left with fewer than a predetermined number of prefixes~~which has been modified or split to include fewer than a minimum number of prefixes, with a parent node arranged closer to the root node than the leaf node having fewer than the minimum number of prefixes~~.

13. (currently amended) The method of claim 12, wherein said merging is performed ~~only if:~~if either (i) the total number of ~~nodes in~~sub-databases defined by the hierarchical tree structure ~~is~~would be, absent said merging, ~~equal to or~~ greater than ~~2N/T+1~~a predetermined number~~;~~, or (ii) a predetermined time period has passed, in which no merging was performed.

14. (currently amended) The method of claim 13, wherein said merging further comprises repeatedly merging the leaf node and ~~the~~ the branch~~parent~~ node up towards the root node~~,~~ if the total number of prefixes within the leaf node, the ~~parent~~ branch node and any subsequently merged ~~parent~~ branch nodes remains less than the minimum number of prefixes.

15. (currently amended) The method of claim 12, wherein said merging is performed only if no other node exists below the ~~parent~~ branch node that can be paired with the leaf node, such that the combined number of prefixes within the leaf node and the other node is greater than T.

16. (currently amended) The method of claim 15, wherein said merging is performed no more than one time in response to an update operation.

17-24. (canceled)

25. (new) A computer-readable storage medium having recorded therein one or more sequences of instructions which, when executed by a processor, cause the processor to update a forwarding database having a number (N) of prefixes, including causing the processor to:

form a hierarchical tree structure having root, branch and leaf nodes that define (i) at least a minimum number (N/T) of sub-databases of the forwarding database and (ii) respective bit combinations associated with the sub-databases, wherein each prefix of the N prefixes is stored within one of sub-databases having an associated bit combination that matches corresponding bits within the prefix, and wherein each of the sub-databases has no more than a predetermined number (T) of prefixes, and at least one of the sub-databases includes a plurality of the prefixes;

modify the hierarchical tree structure in accordance with one or more update operations; and update one or more of the sub-databases to reflect modifications made to the hierarchical tree structure, wherein the one or more updated sub-databases correspond~~s~~ to only those portions of the hierarchical tree affected by the update operations.

26. (new) The computer readable storage medium of claim 25, wherein the computer readable storage medium is directly coupled to, or incorporated within, the processor, and wherein at least a portion of the sub-databases are contained within the computer readable storage medium.

27. (new) The computer readable storage medium of claim 26, wherein the computer readable storage medium comprises random access memory.

28. (new) The computer readable storage medium of claim 26, wherein the computer-readable storage medium comprises one or more of a random access memory, a content-addressable memory, or a network search engine (NSE).